

What is Claimed is:

1. A compressor comprising:

a cylinder having a compression chamber therein;

a piston including;

a head for reciprocating the cylinder while making friction with an inside wall of the cylinder, to draw a working fluid into the compression chamber, compress, and discharge the working fluid,

a skirt extended from a lower end of the head spaced a predetermined distance away from the inside wall of the cylinder, and

guide surfaces each projected from an outside circumferential surface of the skirt for guiding reciprocating movement of the head while making friction with the inside wall of the cylinder; and

a connecting rod connected between the crankshaft and the piston, for converting rotation of the crankshaft into a linear reciprocating movement of the piston.

2. The compressor as claimed in claim 1, wherein the guide surfaces are provided along a length direction of the piston.

3. The compressor as claimed in claim 1, wherein at least two the guide surfaces are provided along a circumferential direction of the skirt at regular intervals.

4. The compressor as claimed in claim 1, wherein the guide surface is provided over a range greater than at least 40° along a circumferential direction of the skirt around the longitudinal axis of the piston.

5. The compressor as claimed in claim 1, wherein the guide surface includes a continuous surface from an outside circumferential surface of the head.

6. The compressor as claimed in claim 1, wherein the outside circumferential surface of the skirt is provided at the same distance from a longitudinal axis of the piston.

7. The compressor as claimed in claim 1, wherein the outside circumferential surface of the skirt has the same radius curvature from the longitudinal axis of the piston.

8. The compressor as claimed in claim 7, wherein the outside circumferential surface of the skirt has an elliptical curvature from the longitudinal axis of the piston.

9. The compressor as claimed in claim 8, wherein an outside surface of the skirt and an outside surface of the guide surface are connected with a continuous surface without a step.

10. A compressor comprising:

a cylinder having a compression chamber therein;

a piston having a projection provided to a head in contact with the compression chamber for inserting into a discharge hole provided for discharging a working fluid when the head is close to a top dead center, for reciprocating inside of the cylinder to draw the working fluid, and compress and discharge the working fluid;

a connecting rod connected between the crankshaft and the piston, for converting rotation of the crankshaft into a linear reciprocating movement of the piston.

11. The compressor as claimed in claim 10, wherein the discharge hole has rounded edges of opposite ends.

12. The compressor as claimed in claim 10, wherein the discharge hole has an intermediate part between opposite ends, having the same area.

13. The compressor as claimed in claim 10, wherein the projection has a height the same with a length of the discharge hole.

14. The compressor as claimed in claim 10, wherein the projection is at a position spaced away from a longitudinal axis of the piston.

15. The compressor as claimed in claim 10, wherein the projection is conical with a fore end thereof cut away therefrom.

16. The compressor as claimed in claim 15, wherein the projection has a ratio of a diameter 'D' of a bottom end to a diameter 'd' of a top end within a range of 1.2 ~ 1.4 : 1.0.

17. The compressor as claimed in claim 15, wherein the projection has the following relation between a top end diameter 'd' thereof to a height thereof.

$$0.3 < h/d < 0.5$$

18. A compressor comprising:

a cylinder having a compression chamber therein;

a piston including;

a head for reciprocating the cylinder while making friction with an inside wall of the cylinder, to draw a working fluid into the compression chamber, compress, and discharge the working fluid,

a projection provided to a head in contact with the compression chamber for inserting into a discharge hole provided for discharging a working fluid when the head is close to a top dead center,

a skirt extended from a lower end of the head spaced a predetermined distance away from the inside wall of the cylinder, and

guide surfaces each projected from an outside circumferential surface of the skirt for guiding reciprocating movement of the head while making friction with the inside wall of the cylinder; and

a connecting rod connected between the crankshaft and the piston, for converting rotation of the crankshaft into a linear reciprocating movement of the piston.

19. The compressor as claimed in claim 18, wherein the guide surfaces are provided along a length direction of the piston, and are provided along a circumferential direction of the skirt at regular intervals.

20. The compressor as claimed in claim 18, wherein the guide surface is provided over a range greater than at least 40° along a circumferential direction of the skirt around the longitudinal axis of the piston.

21. The compressor as claimed in claim 18, wherein the outside circumferential surface of the skirt has the same radius curvature from the longitudinal axis of the piston.

22. The compressor as claimed in claim 18, wherein the outside circumferential surface of the skirt has an elliptical curvature from the longitudinal axis of the piston.

23. The compressor as claimed in claim 18, wherein the projection has a height the same with a length of the discharge hole.

24. The compressor as claimed in claim 18, wherein the projection is conical with a fore end thereof cut away therefrom.

25. The compressor as claimed in claim 24, wherein the projection has a ratio of a diameter 'D' of a bottom end to a diameter 'd' of a top end within a range of 1.2 ~ 1.4 : 1.0.

26. The compressor as claimed in claim 24, wherein the projection has the following relation between a top end diameter 'd' thereof to a height thereof.

$$0.3 < h/d < 0.5$$